

SUPRYN, V.D.

"Hydromechanical Basis of Milk Processing." Sub 2 Nov. 50, thesis for degree of Dr. Technical sci. Moscow Chemicotechnological Inst. of Meat Industry.

Summary 71, 4 Sept. 52, Dissertations Presented for Degrees in Science and Engineering in Moscow in 1950. From Vechernyaya Moskva. Jan-Dec. 1950.

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12

One of the production schemes of buttermaking plants.  
V. Surkov, N. Lipatov, and B. Klimenko (Moscow Meat  
Ind. Chem. Technol. Inst.). *Molokhnaya Prom.* 12, No. 8,  
16-18(1951).—The process proposed by Luk'yanov and  
Shakhov (*ibid.* 11, No. 10, 4-14(1950)) is shown to be  
unsatisfactory in plant practice owing to the losses suffered  
in the fat content and the overall butter yield, although  
it offers savings in utilization of machinery and equipment.  
G. M. Kowalipoff

1. SURKOV, V.
2. USSR (600)
4. Milk - Pasteurization
7. Book which profoundly elucidates the theory of pasteurization (Pasteurization of milk. G. A. Kuk. Reviewed by V. Surkov). Moloch. prom. 14, No. 3, 1953.

9. Monthly List of Russian Accessions, Library of Congress, May 1953, Unclassified.

PELEYEV, A.I., kandidat tekhnicheskikh nauk; SURKOV, V.D., professor,  
doktor tekhnicheskikh nauk, redaktor; SEMENOVA, E.L., redaktor;  
ANUFRIYEV, V.V., inzhener, retsenzent; SHUVALOV, V.N., kandidat  
SHUVALOV, V.N., kandidat tekhnicheskikh nauk; GOTLIB, E.M., tekhnicheskii redaktor

[Operation of vacuum pumps in the meat and milk industries] Eks-  
pluatatsiia vakuum-nasosov v miasnoi i molochnoi promyshlennosti.  
Moskva, Pishchepromizdat, 1955. 104 p. (MLRA 9:1)  
(Vacuum-pumps)

BOUSHEV, T.A.; DEZENT, G.M.; GORBUNOV, M. retsenzent; SURKOV, V.,  
redaktor; AKIMOVA, L.D., redaktor; GOTLIB, E.M., tekhnicheskly  
redaktor.

[Equipment for manufacturing ice cream] Oborudovanie dlia  
proizvodstva moroshenogo. Moskva, Pishchepromizdat, 1955. 136 p.  
(Ice cream industry) (MLRA 8:12)

KIK, Gustav Antonevich, professor, doktor tekhnicheskikh nauk; LUK'YANOV, N.Ya., professor, doktor tekhnicheskikh nauk; SURKOV, V.D., professor, doktor tekhnicheskikh nauk; IVANOVA, N.M., redakter; CHEBYSEVA, Ye.A., tekhnicheskiiy redakter.

[Processes and equipment in the dairy industry] Pretsessy i apparaty melechnoi promyshlennosti. Moskva, Pishchepremizdat. Vol.1. 1955.47lp.  
(Dairying) (MLBA 9:4)

NDV  
② Structural elements of milk and some of the milk products in the visual field of electron microscope. V. Surkov, S. Barkan, and L. Repina (Technol. Inst. Meat Dairy Ind., Moscow). *Molochnaya Prom.* 16, No. 4, 30-1(1955).  
—Discussion with photomicrographs of the fat globule and cheese structures. Vladimir N. Krukovsky

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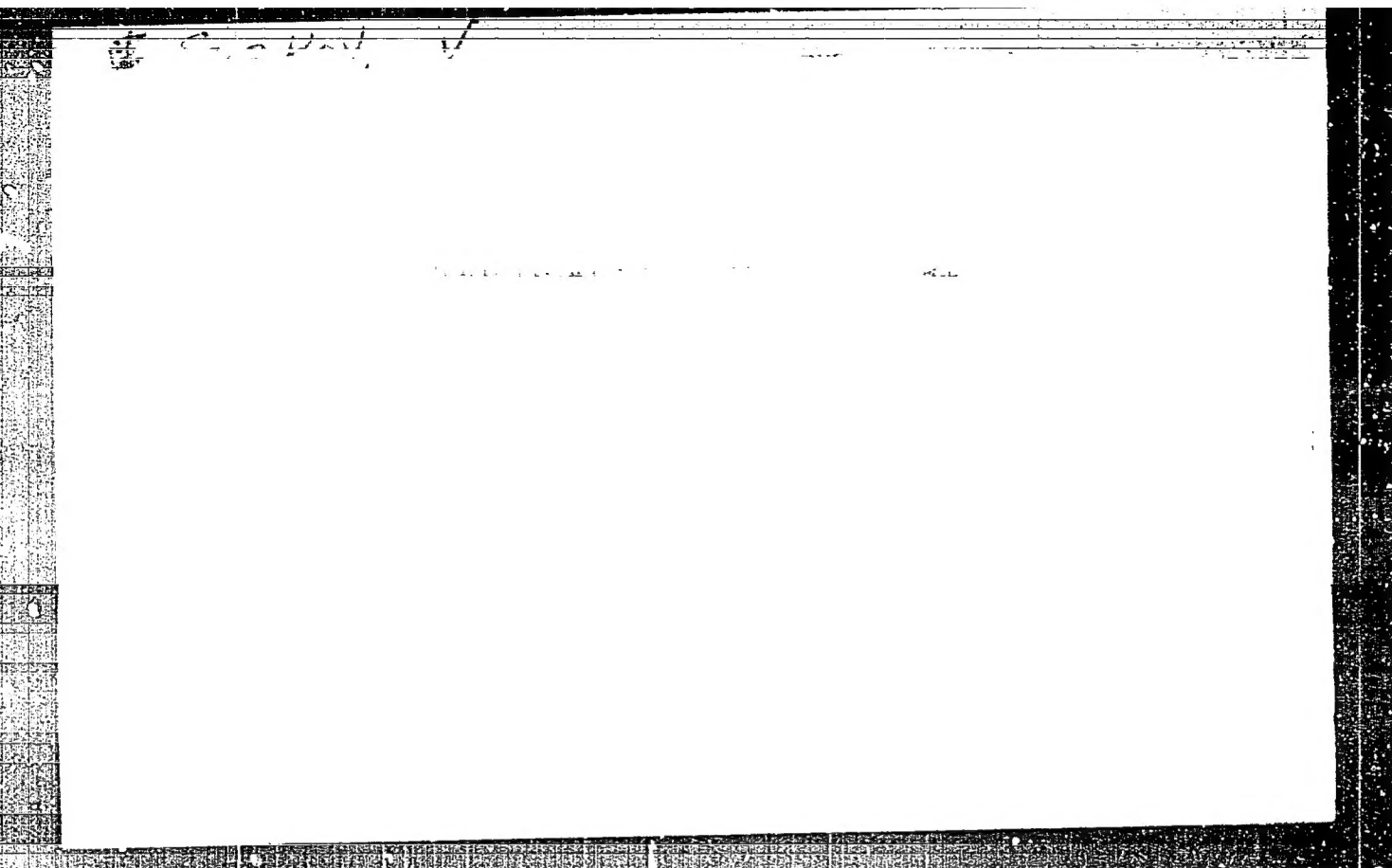
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SURKOV, Viktor Danilovich, prof.; LIPATOV, Nikolay Nikitovich, dotsent;  
VASIL'YEV, P.V., inzh., retsenzent; BARANOVSKIY, N.V., kand.  
tekhn.red., retsenzent, spetsred.; IVANOVA, N.M., red.; GOTLIB,  
E.M., tekhn.red.

[Equipment of dairy plants] Oborudovanie molochnykh zavodov.  
Moskva, Pishchepromizdat, 1958. 437 p. (MIRA 13:1)  
(Dairy plants--Equipment and supplies)

SURKOV, V.D.; NIKOLAYEV, A.S.

Practical standard for evaluating the work of milk fat separators.  
Izv.vys.ucheb.zav.pishch.tekh. no.4:136-142 '58.

(MIRA 11:11)

1. Moskovskiy tekhnologicheskiy institut myasnoy i molochnoy promyshlennosti, Kafedra protsessov i apparatov pishchevykh proizvodstv.  
(Separators (Machines)) (Butterfat)

SURKOV, V.D.; FEDOROV, N.Ye.; KAZAKOV, S.P.; GORBATOV, A.V.

Investigating the flow of cheese curd in pipes. *Izv.vys.ucheb.*  
sav.; pishch.tekh. no.6:88-94 '58. (MIRA 12:5)

1. Moskovskiy tekhnologicheskiy institut myasnoy i molochnoy  
promyshlennosti, Kafedra protsessov i apparatov, Kafedra gidravliki i  
gidravlicheskiy mashin i Kafedra tekhnologii moloeka.  
(Cheese) (Fluid dynamics)

BERLIN, A.A.; SUNKOV, V.D.; BARKAN, S.M.

Utilization of paraffin-polyisobutylene compositions for the manufacture of moisture-resistant packaging materials. *Izv.vys.ucheb. zav.; pishch.tekh.* no.1:94-99 '59. (MIRA 12:6)

1. moskovskiy tekhnologicheskii institut myasnoy i molochnoy promyshlennosti, kafedra tekhnologii moloка i molochnykh produktov.  
(Packaging)

SURKOV, V.D.; MARTYSHKIN, A.Ye.; NIKOLAYEV, A.S.

Investigating the relationship between vibrations in separators  
and the extent of fat removal from milk. Izv.vys.ucheb.zav.:  
pishch.tekh. no.1:123-129 '59. (MIRA 12:6)

1. Moskovskiy tekhnologicheskii institut myasnoy i molochnoy  
promyshlennosti, kafedra tekhnologii moloza i molochnykh produktov.  
(Cream separators--Vibration)

SURKOV, V.D.; FEDOROV, N.Ye.; ROGOV, I.A.

Universal effect of an electric discharge on milk. Izv.vys.  
ucheb.sav.; pishch.tekh. no.4:66-72 '59. (MIRA 13:2)

1. Moskovskiy tekhnologicheskij institut myasnoy i molochnoy  
promyshlennosti. Kafedra protsessov i apparatov pishchevykh  
proizvodstv. Kafedra tekhnologii molochnykh produktov.  
(Dairy products) (Cavitation) (Electric discharges)

SURKOV, V., prof.

Raise the training of technicians to the level of the present tasks.  
Mias. ind. SSSR 30 no.3:29-30 '59. (MIRA 12:9)

1. Moskovskiy tekhnologicheskii institut myasnoy i molochnoy  
promyshlennosti.

(Moscow--Feed industry)



GERNET, M.M., doktor tekhn.nauk,prof.; DIKIS, M.Ya., doktor tekhn.nauk, prof.; LUK'YANOV, V.V., doktor tekhn.nauk,prof.[deceased]; POPOV, V.I., doktor tekhn.nauk,prof.; SOKOLOV, A.Ya., doktor tekhn.nauk,prof.; SOKOLOV, V.I., doktor tekhn.nauk,prof.; SURKOV, V.D., doktor tekhn.nauk,prof.; BAKANOVSKIY, N.V., kand.tekhn.nauk,dots.; BROYDO, B.Ye., kand.tekhn.nauk, dots.; BUZYKIN, N.A., kand.tekhn.nauk, dots.; GOROSHENKO, M.K., kand.tekhn.nauk, dots.; GORTINSKIY, V.V., kand.tekhn.nauk, dots.; GREENYUK, S.M., kand.tekhn.nauk, dots.; GUS'KOV, K.P., kand.tekhn.nauk, dots.; DEMIDOV, A.R., kand.tekhn.nauk, dots.; ZHISLIN, Ya.M., kand.tekhn.nauk, dots.; KARPIN, Ye.B., kand.tekhn.nauk, dots.; KOSITSYN, I.A., kand. tekhn.nauk, dots. [deceased]; GEYSHTOR, V.S., kand.tekhn.nauk, dots.; MARSHALKIN, G.A., kand.tekhn.nauk, dots.; MOLDAVSKIY, G.Ye., kand.tekhn.nauk, dots.; ODESSKIY, D.A., kand. tekhn.nauk, dots.; FELEYEV, A.I., kand.tekhn.nauk, dots.; RUB, D.M., kand.tekhn.nauk, dots.; SKOBLO, D.I., kand.tekhn.nauk, dots.; SHUVALOV, V.N., kand.tekhn.nauk, dots.; KHMEL'NITSKAYA, A.Z., red.; SOKOLOVA, I.A., tekhn. red.

[Principles of the design and construction of machinery and apparatus for the food industries] Osnovy rascheta i konstruirovaniia mashin i apparatov pishchevykh proizvodstv. Moskva, Pishchepromizdat, 1960. 741 p. (MIRA 14:12)

(Food industry—Equipment and supplies)

SURKOV, V.D.

Training of specialists for the dairy industry in England. Izv.  
vys.ucheb.zav.: pishch.tekh. no.1:146-150 '60. (MIRA 13:6)  
(Great Britain--Dairy schools)

SURKOV, V.D.; MARTYSHKIN, A.Ye.; NIKOLAYEV, A.S.

Investigation of vibration factors of a loaded drum in a cream separator. Izv. vys. ucheb. zav.; pishch. tekhn. no.2: 93-98\*160.  
(MIRA 14:7)

1. Moskovskiy tekhnologicheskii institut myasnoy i molochnoy promyshlennosti, kafedra tekhnologii moloka i molochnykh produktov.

(Cream separators--Vibration)

SURKOV, V.D.; STEPANOV, B.D.

Strengthening the creative collaboration of science and industry.  
Izv.vys.ucheb.zav.; pishch.tekh.no.5:175-176 '60. (MIRA 13:12)  
(Science) (Food industry)

SURKOV, V.D.; POPOV, G.I.; VASIL'YEV, K.M.

Automated plasticizer for cottage cheese and other protein products. Izv.vys.ucheb.zav.; pishch.tekh. 1:136-139 '61.

(MIRA 14:3)

1. Moskovskiy tekhnologicheskii institut myasnoy i malochnoy promyshlennosti, Kafedra tekhnologii moloka.  
(Cottage cheese)

SURKOV, V.D.; MIZERETSKIY, N.N.; GUROVA, S.S.

Investigating the centrifugal method for bacterial purification in tray purifiers. Izv. vys. ucheb. zav.; pis'mch. tekhn. no.5:84-91 '61. (MIRA 15:1)

1. Moskovskiy tekhnologicheskii institut myasnoy i molochnoy promyshlennosti. Kafedra tekhnologii moloka.  
(~~mil~~---Microbiology)

SURKOV, Viktor Danilovich, prof.; LIPATOV, Nikolay Nikitovich,  
dots.; BARANOVSKIY, Nikolay Vasil'yevich, kand. tekhn.  
nauk; Primal uchastiye SELIVANOV, N.I., dots., kand.  
tekhn. nauk; IVANOVA, N.M., red.; SOKOLOVA, I.A., tekhn.  
red.

[Technological equipment of dairy enterprises] Tekhnologicheskoe oborudovanie predpriyatii molochnoi promyshlennosti.  
Moskva, Pishchepromizdat, 1962. 576 p. (MIRA 15:8)  
(Dairying--Equipment and supplies)

SURKOV, V. D.

"Systems of secondary and higher education in member countries of  
IDF."

report presented at the 47th Annual Meeting of the Intl. Dairy Federation,  
Aarhus, Denmark, 28 Aug - 1 Sep 1962.



SURKOV, V.D.

"Modern industrial centrifuges" by V.I.Sokolov. Reviewed by  
V.D.Surkov. Izv.vys.ucheb.zav.; pishch.tekh. 2:158-159 '62.  
(MIRA 15:5)

(Centrifuges)  
(Sokolov, V.I.)

SURKOV, V.D.; SHMIDT, G.G.

Optimum thickness of the product layer in a tubular centrifuge  
for the centrifugation of bacteria. Izv.vys.ucheb.zav.;  
pishch.tekh. no.4:124-127 '62. (MIRA 15:11)

1. Moskovskiy tekhnologicheskii institut myasnoy i molochnoy  
promyshlennosti, kafedra tekhnologii moloka i molochnykh  
produktov.

(Separators (Machines)) (Milk--Pasteurization)

SURKOV, V. D.,

"Systems of higher and secondary dairy education in member countries of the IDF"

report to be submitted for Dairy Federation, International (IDF) 48th Annual Meetings  
Massey College, Palmerston North, New Zealand, 4-9 Nov 63

MAKAREVICH, L.M.; SURKOV, V.D.

Investigating the possibility of applying the vibration frequency method in the inspection and rejection of damaged glass bottles.  
Izv.vys.ucheb.zav.; pishch.tekh. no.1:139-145 '63. (MIRA 16:3)

1. Moskovskiy tekhnologicheskii institut myasnoy i molochnoy promyshlennosti, kafedra tekhnologii moloka i molochnykh produktov.  
(Bottles—Testing)

SURKOV, V.D.; FOFANOV, Yu.F.

Value of Reynold's critical number in vibrating flows. Izv.  
vys. ucheb. zav.; pishch. tekhn. no.6:102-107 '63.

(MIRA 17:3)

1. Moskovskiy tekhnologicheskiy institut myasnoy i molochnoy  
promyshlennosti, kafedra tekhnologii moleka,

TABACHNIKOV, V.P.; SURKOV, V.D.

Pressing of the cheese curd mass under vacuum. Izv.vys.ucheb.zav.;  
pishch.tekh. no.1:82-86 '64. (MIRA 17:4)

1. Tsentral'nyy nauchno-issledovatel'skiy institut maslodel'noy  
i syrodel'noy promyshlennosti i Moskovskiy tekhnologicheskoy  
institut myasnoy i molochnoy promyshlennosti.

MAKAREVICH, L.M.; SURKOV, V.D.

Electric spark method for inspecting glass bottles. Izv.vys.ucheb.  
zav.; pishch.tekh. no.1:161-166 '64. (MIRA 17:4)

1. Moskovskiy tekhnologicheskii institut myasnoy i molochnoy  
promyshlennosti i Institut avtomatizatsii proizvodstvennykh  
protseessov pishchevoy promyshlennosti.

SURKOV, V.D.; KAUKHCHESHVILI, E.I.

Conference on food drying by sublimation. Izv.vys.ucheb.zav.;  
pishch.tekh. no.1:174 '64. (MIRA 17:4)



SURKOV, V.D.; ROGOV, I.A.; KOSTYGOV, L.V.

Orientation of the particles of biological suspensions in a high-frequency electric field. Izv. vys. ucheb. zav.; pishch. tekhn. no.2:83-86 '63. (MIRA 16:5)

1. Moskovskiy tekhnologicheskii institut myasnoy i molochnoy promyshlennosti, kafedra protsessov i apparatov pishchevyykh proizvodstv.

(Suspensions (Chemistry))

(Electric fields)

BERISHTAYN, G.D., kand. tekhn. nauk; KOLOMYTSEV, I.V.; SURKO, V.I.;  
KOLUNCH, S.A.

Causes of inadequate oil purification in motor-vehicle engines.  
Avt. prom. 31 no.3:15-18 Mr '65. (MIRA 18:7)

1. Kazakhskiy gosudarstvennyy sel'skokhozyaystvennyy institut.

KUPERSHMIDT, M.L., inzh.; SURKOV, V.I., inzh.; BYKOV, A.S., inzh.;  
DANTSIN, M.I., inzh.; NOVIKOVA, E.T., inzh.

Preparation of highly filled linoleum using improved techniques.  
Stroi. mat. 7 no.4:26-29 Ap '61. (MIRA 14:5)  
(Linoleum)

KUPERSHIMDT, M.L.; SURKOV, V.I.

Setting of poly(vinyl chloride) linoleum. Plast.massy no.10:33-36  
'61. (MIRA 15:1)  
(Linoleum)

PANTELEYEV, Ivan Yakovlevich; SURKOV, V.N.

[Mineral springs and therapeutic mud in the Caucasus Mineral Waters region] Mineral'nye istochniki i lechebnaia giaz' raiona Kavkazskikh Mineral'nykh Vod. Piatigorsk, 1960. 164 p. (MIRA 13:11)

(CAUCASUS--MINERAL WATERS)  
(CAUCASUS--BATHS, MOOR AND MUD)

GUREVICH, M.G.; KRAVTSOV, S.S.; OVCHINNIKOV, I.M.; SURKOV, V.N.

Recent data on the concentration of some trace elements in natural  
gases and waters of the Northern Caucasus. Trudy IGEM no.46:92-97  
'60. (MIRA 14:1)

(Caucasus, Northern—Mineral waters)  
(Caucasus, Northern—Gas, Natural) (Trace elements)

SURKOV, V.S.; SEMERKIN, V.I.

Tectonic pattern of the sedimentary cover in the South  
Minusinsk Lowland. Trudy SNIIGGIMS no.5:15:22 '60. (MIRA 15:12)

(Minusinsk Basin—Geology, Structural)

SURCOV, V.S.

Summary of structure of the South Minersk Lowland, based on  
geophysical data. Geol. i. 1962-69 '60.  
(: IIA 14:3)

1. Level of study: South Minersk Lowland.  
(Minersk Lowland--1960, Structural)



СУРКОВ, Г. С.

Dissertation defended for the degree of Candidate of Geologo-Mineralogical Sciences at the Joint Academic Council on Geologo-Mineralogical, Geophysical, and Geographical Sciences; Siberian Branch 1962.

"Structure of Folded Complexes of the Northern Part of the Altay-Sayanskaya Oblast of the Foundation and Sedimentary Cover of Its Intermontane Depressions and the Southeast Part of the Western Siberian Depression, From Geophysical Data."

Vestnik Akad. Nauk, No. 4, 1963, pp 119-145

BULYNNIKOVA, Antonida Aleksandrovna; SURKOV, Viktor Semenovich;  
IONEL', A.G., vedushchiy red.; VORONOVA, V.V., tekhn. red.

[Geology and prospects for finding oil and gas in the south-  
eastern part of the West Siberian Plain.] Geologicheskoe  
stroenie i perspektivyy neftegazonosti iugo-vostochnoi  
chasti Zapadno-Sibirskoi nizmennosti. Moskva, Gostoptekhis-  
dat, 1962. 73 p. (Materialy po geologii Zapadno-Sibirskoi  
nizmennosti, no. 2) (MIRA 17:1)

SURKOV, V.S.

New concepts of the structure and age of the fold basement  
in the West Siberian Plain. Geol. i geofiz. no.2:19-27 '63,  
(MIRA 16:5)

1. Novosibirskiy geofizicheskiy trest.  
(West Siberian Plain—Geology)

KARLOV, G.V.; SURKOV, V.S.; MICHEN'KINA, P.P.

Crustal structure in the southern part of the Laptev Sea (Alaskan  
Plain). Izv. i geofiz. no. 11-12 '65. (MIRA 18:6)

1. Issledovanie geologii i geofiziki Sibirskogo otdeleniya AN SSSR  
Sibirskoy nauchno-issledovatel'skoy inst. i geofiziki, geofiziki  
i struktural'naya geofizika. Nov. Mir.

TUYEZOVA, Nina Aleksandrovna; Prinimali uchastiye: DEMINA, R.G.; BRYUZGINA, N.I.; ROSTOVTSEV, N.N., glavnyy red.; GURARI, F.G., zamestitel' glavnogo red.; UMANTSEV, D.F., red.; DERBIKOV, I.F., red.; KAZARINOV, V.P., red.; KALUGIN, A.S., red.; KOLOBKOV, M.N., red.; MALIKOV, B.N., red.; MIKUTSKIY, S.P., red.; BOTVINNIKOV, V.I., red.; BUDNIKOV, V.I., red.; BOGOMYAKOV, G.F., red.; SURKOV, V.S., red.; SUKHOV, S.V., red.; BOCHAROVA, N.I., red.

[Physical properties of rocks in the West Siberian Plain.]  
Fizicheskie svoistva gornykh porod Zapadno-Sibirskoi nizmennosti.  
Moskva, Nedra, 1964. 127 p. (Sibirskii nauchno-issledovatel'skii  
institut geologii, geofiziki i mineral'nogo syr'ia, Trudy, no.31).  
(MIRA 18:7)

ACC NR: AT0028377

(N)

SOURCE CODE: UR/0000/65/000/000/0118/0123

AUTHOR: Kondrashov, V. A.; Mandel'baum, M. M.; Puzyrev, N. N.; Surkov, V. S.

ORG: none

TITLE: Technique of regional seismic investigations in Siberian platform areas

SOURCE: International Geological Congress. 22d, New Delhi, 1964. Geologicheskiye rezul'taty prikladnoy geofiziki (Geological results of applied geophysics); doklady sovetskikh geologov, problema 2. Moscow, Izd-vo Nedra, 1965, 118-123

TOPIC TAGS: seismology, platform area, sedimentary cover, ~~reflection profile~~, seismic prospecting / *Libra*

ABSTRACT: Regional seismic investigations conducted in platform areas of Siberia for the purpose of studying principal features of the deep structure are described. This work was performed mainly in connection with oil and gas prospecting in the area. To study the folded basement a special technique of single and linear head-wave soundings has been developed which makes it possible to investigate forest-covered areas. The results of the field work have revealed some features of the basement structure which had previously not been detected, including differentiation of the basement into layers according to their elastic properties. The sedimentary cover is investigated primarily by the reflection method in its various modifications.

Card 1/2

ACC NR: AT6028377

For regional investigations, wide use is made of single reflection soundings which are applied on a wide scale in the west Siberian lowland. Using this technique in area of nearly 50,000 km<sup>2</sup> has been surveyed. Also widely used is a technique of regional seismic-reflection profiles including profiles along the rivers. These investigations have resulted in maps and cross-section diagrams which show clearly the effectiveness of the survey. Orig. art. has: 2 figures.

SUB CODE: 08/ SUBM DATE: 06Jan65

Card 2/2

ACC NR: AT6028376

(N)

SOURCE CODE: UR/0000/65/000/000/0111/0117

AUTHOR: Rostovtsev, N. N.; Surkov, V. S.; Umantsev, D. F.

ORG: none

TITLE: Geological and geophysical investigations in the west Siberian lowland

SOURCE: International Geological Congress. 22d, New Delhi, 1964. Geologicheskkiye rezul'taty prikladnoy geofiziki (Geological results of applied geophysics); doklady sovetskikh geologov, problema 2. Moscow, Izd-vo Nedra, 1965, 111-117

TOPIC TAGS: geologic <sup>exploration</sup> ~~structure~~, ~~lowland~~, ~~sediment~~, ~~deep drilling~~, ~~geophysics~~, ~~earth~~  
gravity, *tectonics*, *seismic prospecting*

ABSTRACT: An analysis of recent geological studies of the west Siberian lowland is presented. Geotectonically, the west Siberian lowland forms the base of the Ural-Siberian Epihercynian platform. The geological structure of its deep-seated horizons is hidden under the overburden of Tertiary and Quaternary sediments and hence cannot be studied by geological surveying. The geological structure of such areas is now being studied by geophysical methods and deep drilling. The area of the lowland has been covered by aeromagnetic and gravity surveys, and a great amount of seismic and electrical prospecting has been conducted. Stratigraphic and exploratory holes were drilled at a number of points. This work made it possible to establish the principal features of the geological structure of the lowland, as a whole, and to

Card 1/2



ACC NR: AT6028376

investigate some of the areas in detail. The west Siberian platform consists of two structural stages: the folded basement and the sedimentary overburden. The aeromagnetic and gravity surveys have detected folded units of the platform basement which are reflected in Mesozoic and Cenozoic platform overburden as gentle rampart-like uplifts. The same investigations have established the the heterogeneity of the basement and the presence of intermontane Paleozoic depressions in the basement. A sand and clay series of the Mesozoic and Cenozoic platform overburden proved to be favorable for seismological surveys, which, in combination with deep bore holes and the data of aeromagnetic and gravity surveys, made it possible to outline the general features of the geological structure of the overburden and to study some areas in detail. The seismic survey located and prepared for drilling numerous local highs many of which have proved to contain commercial reserves of oil and gas. Orig. art. has: 3 figures.

SUB CODE: 08/ SUBM DATE: 06Jan65/

Card 2/2

AUTHOR: Dubinin, N. P.; Shcherbakov, V. K.; Surkov, V. V.

TITLE: Antimutagenic and mutagenic effect of amino acids with antiradiation properties

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B

ABSTRACT: Literature sources indicate that certain antiradiation compounds act as mutagens and antimutagens depending on compound concentration and conditions. The present investigation compares the mutagenic and antimutagenic effects of two highly important amino acids with antiradiation properties, arginine and cysteine. In the seeds of *Allium cepa* L. (onion) seeds and *Salmonella typhimurium* (bacteria) different results were obtained. The frequency of the sprouting of the seeds decreased with an arginine concentration of  $2 \cdot 10^{-1}$  mg/ml.

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ACCESSION NR: AP5000922

and antimutagenic effects were displayed with arginine concentrations of 1.1-20 mg/ml. Mutation frequency of the Erlich ascitic sarcoma cells increased from 11.41 to 11.41% with an arginine concentration of 1 mg/ml and increased to 11.77% with an arginine concentration of 20 mg/ml. In the second experimental series *Allium fistulosum* onion seeds were grown in different concentrations of arginine. Mutation frequency of the onion seeds at concentrations of 1.1-14 and 20 mg/ml was 1.1-1.4% and 1.4-1.7% respectively. Arginine acts as a mutagen in low concentrations, as a mutagenic inhibitor in moderate concentrations, and in high concentrations acts as a mutagen. The nature of the mutagenic, antimutagenic, and antiradiation properties displayed by arginine, amino acids and certain other compounds is not clear at this time and requires further research. Orig. art. has: 3 tables.

**ASSOCIATION:** Institut biologicheskoy fiziki Akademii Nauk SSSR  
(Institute of Biological Physics, Academy of Sciences SSSR)

AUTHOR: SURKOV, V.Z. PA - 2102  
 TITLE: Electron Emission from Dielectric Films Bombarded with Positive Hydrogen Ions. (Russian).  
 PERIODICAL: Zhurnal Eksperim. i Teoret. Fiziki, 1957, Vol 32, Nr 1, pp 14-19 (U.S.S.R.)  
 Received: 3 / 1957 Reviewed: 4 / 1957  
 ABSTRACT: Measuring Device and Measuring Method: The measuring device is discussed on the basis of a drawing. The target is bombarded in the operating chamber with the positive ions emerging from a mass-analyzer. Ion flux was measured by means of a galvanometer in the collector target circuit. The current of electron emission was measured by means of the same galvanometer within the circuit: collector-target or within the circuit: target-collector-target; the amounts of the potentials used on this occasion are given. The film of the dielectricum was steamed on to the target in the vacuum. After the steaming on of the film, the target was fitted opposite the collector and bombarded with ions. Before the film was steamed on, the base of the target was heated to from 1000 - 1200° until the vacuum in the operating chamber attained  $\sim 10^{-6}$  torr. Also another method of steaming on mentioned here furnished no essential different targets.  
Measuring Results: The electron emission of  $B_2O_3$ -films: The  $B_2O_3$

Card 1/3

PA - 2102

Electron Emission from Dielectric Films Bombarded with Positive Hydrogen Ions.

and  $H_3^+$ -ions of from 10 - 40 MeV a secondary electron emission with the coefficients  $\sigma \sim 3$  was observed.

All 30 targets with  $CaF_2$ -films investigated furnished an electron emission of from some minutes to six hours duration after the end of the bombardment. Also the influence exercised by temperature on  $CaF_2$ -films is discussed. On the occasion of the investigation carried out with the aid of an electron projector the luminescence of the screen was not steady but it occurred only in spots. In conclusion the changes of the surface potential of the target with  $CaF_2$ -films are discussed.

ASSOCIATION: State University of Charkov.

PRESENTED BY:

SUBMITTED:

AVAILABLE: Library of Congress

Card 3/3

PROCEDURES AND PROPERTIES INDEX

**B-I-8**

**BC**

Densitration of nitroxyisulfuric acid. I. N. KUMARICH and E. L. SUMNER (J. Chem. Ind. Russ., 1934, 10, No. 8, 26—32).—The velocity of elimination of  $N_2O_5$  from  $HO-SO_3H$  falls with increasing  $[H_2SO_4]$ , and with falling temp. The process of densitration is due partly to desorption of  $N_2O_5$  by  $SO_3$ , and partly to reduction by  $SO_3$  in the liquid phase.

R. T.

ASS-SLA METALLURGICAL LITERATURE CLASSIFICATION

BOOKS \*A  
SERIES MAP ONE ONE  
SERIES ONE ONE ONE

PROCESSES AND PROPERTIES INDEX																									
1ST AND 2ND ORDERS													100 AND 8TH ORDERS												
<p>Intensity of acid formation in the interaction of sulfur dioxide and nitroacetic acid. I. N. Kur'minskikh and E. I. <del>Sarkov</del>. <i>Khimiya</i> 7, 473-9 (1935); cf. C. A. 29, 2977; Kur'minskikh and Yudina, C. A. 28, 7437. A discussion, with math. treatment, is based chiefly on the previous Chas. Blanc investigations.</p>																									
<p>ASAC-ALA METALLURGICAL LITERATURE CLASSIFICATION</p>																									

Interaction of sulfur dioxide and nitroso during bubbling.  
Ziminikh, E.I. Surkov, V.I. Yudin and  
Chem. (U.S.S.R.) 10, 1968, 3215.

Mur'minskykh, E.I. Surkov, V.I. Yulina and E.A. Andreeva. J. Applied Chem. (U.S.S.R.), 10, 1226-31 (in German 1931, 1937); of C.A.B., 3215. During a lab. investigation of the  $\text{SO}_2$  conversion and denitration while bubbling, it was found that the velocity of these processes is proportional to the concn. of  $\text{SO}_2$  in the gas, to the viscosity of the acid and to the height of the liquid layer. The velocity of denitration of acid is also proportional to the rate of introduction of gas into the bubbling tower (with const. dimensions of gas bubbles). The velocities of  $\text{SO}_2$  conversion and denitration increase considerably with increase of temp. and decrease of the  $\text{H}_2\text{SO}_4$  concn. Increase of the O concn. in the gas considerably increases the  $\text{SO}_2$  conversion in the bubbling tower. Equations and consts. characterizing the method are given, which are applicable to industry. Three references. AA<sup>12</sup>



Automatic determination of oxygen. I. N. Kuzmaich and E. I. Surkov. (Zerod. Lab., 1939, 8, 541-544).—In a standard Orsat tube a  $\text{Na}_2\text{S}_2\text{O}_8$  solution cannot be substituted for the pyrogallol (B) solution as the former is too fluid; if, instead, the vessel is filled with glass tubes 1.5 cm. long a solution of  $\text{Na}_2\text{S}_2\text{O}_8$  16, NaOH 6.7, and  $\text{H}_2\text{O}$  79.3% absorbs  $\text{O}_2$  better than does (B). J. J. R.

SURKOV, Ye. I. Cand Tech Sci -- (diss) "<sup>p</sup>Absorption of nitric oxides <sup>by</sup> sulfuric acid <sup>on</sup> to diffusion plates." Mos, 1957. 12 pp (Min of Chem Industry USSR. Sci Inst for Fertilizers and Insectofungicides im Prof~~essor~~ Ya. V. Samoylov), 110 copies (KL, 4-58, 83)



AKSEL'ROD, Yu.V.; SURENOV, Ye.I.; RAKH, V.M.

Investigation of hydrodynamics and mass transfer in the system  
sulfur trioxide - sulfuric acid under the conditions of bubbling  
on a turbogrid-type sieve tray. Trudy MHTI no.33:33-42  
'61. (MIRA 14:10)

(Mass transfer)  
(Plate towers)  
(Sulfuric acid)

SURKOV, Ye.I.; KUZNETSOV, A.G.; GORINOV, P.V.

Water bubble absorption of phenol vapors from flue gases.  
Trudy MFTI no.33:48-51 '61. (MIRA 14:10)  
(Plate towers)  
(Phenols)

Dependent on rate of absorption of sulfuric anhydride by sulfuric  
acid and on various factors occurring in the process  
sieve plates. Trudy INCHTI no.35:134-139 '61. (MIRA 14:10)  
(Sulfur trioxide)  
(Absorption)  
(Plate towers)

RAM, V.M.; SURMOV, Ye.I.; AKSEL'ROD, Yu.V.; GIBOVA, N.N.;  
Prinipalni uchastnye: VASIL'YEV, D.T., inzh.; GIBOVA, T.G.

Absorption of sulfuric anhydride in the contact process  
manufacture of sulfuric acid in bubble columns with sieve  
and tubular plates. Trudy MKHTI no.35:140-146 '61.  
(MIRA 14:10)

(Sulfuric acid)  
(Plate towers)

AKSEL'ROD, Yu.V.; RAMM, V.M.; BURKOV, Ye.I.

Hydrodynamics of the  $\text{SO}_2$  -  $\text{H}_2\text{SO}_4$  bubble system. Trudy MKhTI  
no. 40:78-85 '63. (MIRA 18:12)



AKSEL'ROD, Yu.V.; VASIL'YEV, B.T.; GUROVA, N.M.; RAMM, V.M.; SURKOV, Ye.I.;  
TSURIKOV, S.A.

Absorption of sulfuric anhydride in bubble towers with the yield of  
oleum. Khim.prom. no.1:39 Ja '64. (MIRA 17:2)

AKSELIROD, Yu.V.; PAMM, V.M.; SURKOV, Ye.I.

Equilibrium pressure of sulfuric anhydride vapors over oleum.  
Zhur. prikl. khim. 37 no.6:1199-1204 Je '64.

(MIRA 18:3)

SURKOV, Ye.L.

Crossing symmetry and helicity amplitudes. IAd. fiz. 1 no.6:  
1113-1120 Je '65. (MIRA 18:6)

ZUYEV, G.I. (Odessa); NEEESNOV, V.I. (Odessa); SURKOV, Ye.M. (Odessa)

Transient operating conditions in a system consisting of a vessel hull, propellers, and engines. Izv. AN SSSR. Otd. tekhn. nauk.  
Energ. i avtom. no.3:65-72 My-Je '62. (MIRA 15:6)  
(Marine engineering) (Electromechanical analogies)

ANAN'YEV, B.G., red.; LOMOV, B.F., red.; SURKOV, Ye.N., red.;  
KISELEVA, L.I., tekhn. red.

[Problems of perception of space and time] Problemy vospriyatia  
prostranstva i vremeni; Materialy. Pod red. B.G. Anan'yeva i B.F.  
Lomova. Leningrad, Leningr. otd-nie ob-va psikhologov, 1961. 211 p  
(MIRA 15:6)

1. Nauchnoye soveshchaniye po problemam vospriyatiya prostran-  
stva i vrereni. 2d, Leningrad, 1961. 2. Kafedra psikhologii Lenin-  
gradskogo universiteta (for Anan'yev). 3. Laboratoriya industrial'-  
noy psikhologii Leningradskogo gosudarstvennogo universiteta im.  
A.A. Zhdanova (for Lomov).

(Space perception)

(Time perception)

L 20652-11

ACCESSION NR: AT5003185

S/0000/64/000/000/0109/0119

4  
2  
B+1

AUTHOR: M. Surkov, Ye. N.

TITLE: Comparative characteristics of the sensor-motor components of human activity in various control systems

SOURCE: Leningrad. Universitet. Problemy obshchey i inzhenernoy psikhologii. Leningrad. 1964. 109-119

TOPIC TAGS: centralized control, control panel, sensory field, human adaptation, control, sensor-motor component, industrial psychology, automatic traffic control, erroneous identification, automatic traffic control, sensory field, human adaptation, control, sensor-motor component, industrial psychology

ABSTRACT: The adaptation of the human operator to various automated systems was tested and analyzed in the case of centralized railroad traffic control. Three series of experiments involving 15 students from Leningrad University were carried out. The experiments consisted of a portable control panel with a variable switch, a tape recorder and oscillograph. The results of the experiments showed that the time characteristics of the human operator in the conditions in which he was working were significantly different from the conditions in which he was not working. All the results of the experiments are presented in the paper.

L 26652-55

ACCESSION NR: AT5003185

the investigations point to the existence of two operational control levels, sensory and intellectual. The visual scheme of the task, in this case train routing, is perceived at the sensory level in the form of lines or trajectories or merely as a set of points. It is in this area that most of the errors are made in the first stages of habit development. The realization of the mentioned task, not as a combination of various spatial structures or lines but as a combination of a limited number of points, is a strictly intellectual process involving operational thinking. Orig. art. has: 2 figures and 4 tables.

ASSOCIATION: None

SUBMITTED: 07Sep64

ENCL: 00

SUB CODE: PH, GO

NO REF SOV: 001

OTHER: 000

ALSHINBAYEV, M.R.; AMELIN, V.P.; ANDRIANOVA, O.V.; GASIYEV, Zh.;  
DEGRAF, G.A.; INKARBEKOV, A.B.; KOLOMYTSEV, I.V.; KOLTUSHKIN,  
I.S.; MALAKHOV, V.P.; MONASTYRSKIY, A.O.; REZNIKOV, B.N.;  
SAKHAROV, I.V.; SENNIK, V.K.; SOSNIN, V.A.; SURKO, V.I.;  
SURKOV, Ye.P.; SYRLYBAYEV, S.N.; USIKOV, N.V.; UCHAYEV, A.F.;  
SHESTOPALOV, Ye.V.; SHERMAN, R., red.; GOROKHOV, L., tekhn.  
red.

[Study manual for a machinery operator] Uchebnik-spravochnik  
mekhanizatora. Alma-Ata, Kazsol'khozgiz, 1963. 326 p.  
(MIRA 16:12)

1. Alma-Ata, Kazakhskiy gosudarstvennyy sel'skokhozyaystven-  
nyy institut. Fakul'tet mekhanizatsii. 2. Sotrudniki fakul'-  
teta mekhanizatsii Kazakhskogo gosudarstvennogo sel'sko-  
khozyaystvennogo instituta (for all except Sherman, Gorokhov).  
(Agricultural machinery)



SURKOV, Ye.V.; CHURASHOV, V.I.

Rivets. Standartizatsiia 27 no.10:38-3 0 '63.

(MIRA 16:11)

1764 Optical grapho-polarography 14 1 1964  
The construction of a new type of  
a new grapho-polarograph are described and  
the effect of various factors on the results are  
studied. The experimental results are compared  
with the results calculated from the theoretical  
equation. (See: Faraday, 1964, 14, 127)  
The method is considerably more accurate than  
the ordinary grapho-polarograph. (See: 1764)  
The authors are: [illegible]

1764  
15-55

U S S R

2031. Oscillographic polarography. Ya. P. Gokhshtein and Ya. A. Surkov (Zh. Anal. Khim., USSR, 1954, 9, 6, 319-343).--Methods of oscillographic polarography, including those of Matheson and Nichols, Randles, Delahay, Delahay as modified by the authors (Anal. Abstr., 1954, 1, 1746), Snowden and Page, Cruse and Hebert, (Z. Elektrochem., 1953, 57, 379), Sevcik and Heyrovsky, are reviewed and its advantages over ordinary polarography are discussed. Results of experiments with a saw-tooth wave are compared with theoretical results derived from the equations of Randles and of Sevcik, and a semi-empirical equation is proposed to replace these equations. G. S. Smith.

62  
PH

*See also Abstracts of V. I. Vondelich,  
1954-1955*

SURKOV, Yu. A. Cand Phys-Math Sci -- (diss) "Alpha - dissociation  
of elements of medium atomic weight." Mos, 1957. 11 pp with graphs.  
(Acad Sci USSR. Inst of Phys Chemistry.) 110 copies. Bibliography  
at the end of the text. (12 <sup>titles</sup> ~~names~~)  
(KL, 8-58, 103)

-4-

SURKOV, Yu. A.

32-9-14/43

AUTHOR: Surkov, Yu.A., Moskaleva, L.P.

TITLE: Physical Apparatus and Measuring Methods in Radiochemical Investigations (Fizicheskaya apparatura i metody izmereniya pri radiokhimicheskikh issledovaniyakh)

PERIODICAL: Zavodskaya Laboratoriya, 1957, Vol. 23, Nr 9, pp. 1072-1080 (USSR)

ABSTRACT: Several physical devices and methods of measuring radioactivity, which were worked out by the authors for radiochemical investigations of nuclear fission products are described. Work was carried out in 1954-1956 on a synchrocyclotron of the United Institute for Nuclear Research. The largest part of the devices and plants described here was also used for the analysis of geological samples with uranium, thorium, and potassium. First, the examination of  $\alpha$ -activity is described. For the radiochemical investigations of  $\alpha$ -active isotopes, which are formed by nuclear reactions, a scintillating  $\alpha$ -counter, an ionization chamber with a momentum-amplitude analyzer, as well as NIKFI photoplates of a thickness of  $50 \div 100 \mu$  were used. The examination of  $\beta$ -activity is described. Here the measuring of energy was carried out on the upper boundary of the  $\beta$ -spectrum only for the purpose of identifying nuclear reaction products. As, in radiochemical investigations,

Card 1/2

Experimental Investigations of the  $\alpha$ -Decay of Elements of Medium Atomic Weight 20-5-15/54

Nuclear Research. The elements produced on the occasion of these nuclear reactions were separated chromatographically. The chromatograms of the products produced by bombarding Zr, Yb and Hf with 660 MeV protons are shown in a figure. A table contains all  $\alpha$ -active isotopes which the author observed among the products of the bombarding of the elements with medium atomic weight. There are 1 figure, 1 table and 10 references, 1 of which is Slavic.

ASSOCIATION: Institute for Geochemistry and analytical Chemistry imeni V. I. Vernadskiy AN USSR (Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo Akademii nauk SSSR).

PRESENTED: By A. P. Vinogradov, Academician, March 7, 1957

SUBMITTED: March 7, 1957

AVAILABLE: Library of Congress

CARD 2/2

SURKOV, Yu. A.

7-58-3-15/15

AUTHOR: Gerasimovskiy, V. I. (Moscow)

TITLE: Chronicle (Khronika) Memorial Meeting for V. I. Vernadskiy  
(On His 95th Birthday) [Zasedaniye, posvyashchennoye pamyati  
V. I. Vernadskogo (95-ya godovshchina so dnya rozhdeniya)]

PERIODICAL: Geokhimiya, 1958, Nr 3, pp. 283 - 284 (USSR)

ABSTRACT: On March 12, 1958 an extended meeting of the professors of  
the Institute of Geochemistry and Analytical Chemistry imeni  
V. I. Vernadskiy AS USSR (Uchenyy sovet Instituta geokhimii  
i analiticheskoy khimii imeni V. I. Vernadskogo AN SSSR)  
was held. It was organized in remembrance of Vladimir  
Ivanovich Vernadskiy, Member of the Academy of Sciences,  
the mineralogist and founder of geochemistry, biogeochemistry  
and radiology. The anniversary meeting was opened by A. P.  
Vinogradov, Member of the Academy of Sciences. His speech  
dealt with V. I. Vernadskiy's stay in Paris (1922 - 1925),  
where he was working on biogeochemistry and radiology.  
Then the following lectures were held:

Card 1/3

A. B. Ronov: "On the Geochemistry of Iron in Sedimentary

7 58 3-15/15

Chronicle. Memorial Meeting for V. I. Vernadskiy (On His 95th Birthday)

Rocks" (K geokhimii zheleza v osadochnykh porodakh). Clays of the Russian platform were investigated as to their content of  $Fe_2O_3$  and  $FeO$ . By means of two geochemical maps the lecturer tried to find a correlation between the  $Fe_2O_3/FeO$  ratio and the organic carbon content in these clays.

D. P. Malyuga: "Biogeochemical Prospecting of Molybdenum" (Biogeokhimicheskiye poiski molibdena).

At Kadzharan (Armenyanskaya SSR) on the left bank (Levoberezhnye) of the river Okhchi biogeochemical prospecting was carried out. The compiled maps make it possible to outline the distribution halos of the new ore zones. They were proved by trial pits (see the article by the author in Geokhimiya, 1958, Nr 3, pp. 248 - 266).

Yu. A. Surkov: "Alpha-Radiation of Elements of Medium Atomic Weight" (Alfa-raspredeleniye elementov srednego atomnogo vesa).

A system of the  $\alpha$ -active isotopes was set up; based on it the possible existence of some  $\alpha$ -active isotopes was predicted - their mass number and their decay energy was calc.

Card 2/3



Chronicle. Memorial Meeting for V. I. Vernadskiy (On His 95<sup>th</sup> Birthday) <sup>7.58-3.15/15</sup>

culated and the expected half life was estimated. By means of subsequent experimental works new data on the  $\alpha$ -decay of elements of medium atomic weight were obtained and the existence of new  $\alpha$ -active isotopes was proved.

SUBMITTED: March 18, 1958

1. Chemistry--JSSR
2. Scientific personnel--USSR
3. Scientific research--USSR
4. Radioactive substances

Card 3/3

AUTHORS: Baranov, V. I., Surkov, Yu. A., SOV/7-58-5-8/15  
Vilenskiy, V. D.

TITLE: On the Presence of an Isotopic Shift in Natural Uranium  
Compounds (O sushchestvovanii izotopnykh sdvigov v prirodnykh  
soyedineniyakh urana )

PERIODICAL: Geokhimiya, 1958, Nr 5, pp 465 - 472 (USSR)

ABSTRACT: The authors tried to determine whether by the easier mobility  
of  $U^{234}$  a disturbance of the radioactive equilibrium in  
secondary and displaced minerals may occur. The samples were  
supplied by I.G.Chentsov, V.S.Serebrennikov and G.A. Volkov  
from the Institut geologii rudnykh mestorozhdeniy, petrografii,  
mineralogii i geokhimii AN SSSR (Institute for the Geology  
of Ore Deposits, Petrography, Mineralogy and Geochemistry, AS  
USSR). Two of the 14 samples investigated were uranium pitch  
blende. 1 was uranium containing water, 3 were uranium black,  
3 were uranium bearing bituminous limestones, and 4 were  
albitized Kalsinters rich in phosphorite. The samples 4 to  
13 were leached out with hydrochloric acid and hydrogen per-  
oxide, or with hydrochloric acid and calcium nitrate. The  
substance leached out and the residue were investigated

Card 1/3

On the Presence of an Isotopic Shift in Natural  
Uranium Compounds

SOV/7-58-5-8/15

separately. In some samples several fractions (up to 3) of different granular size were investigated. The authors first extracted uranium with ether from the samples and then by means of the ion-exchanger, Dowex-1 (Daueks-1). The extracted uranium was separated electrolytically on steel platelets. The alpha spectra were measured by means of a special apparatus; this apparatus is shown in a photograph (Fig 1) and in form of a block scheme (Fig 2). It mainly consists of the ionization chamber, the pre-amplifier, the amplifier with the discriminator, and the 50 channels amplitude analyzer. The spectra are recorded by means of an oscillator; the principle of recording is explained in figure 3. The alpha spectra of three samples are given (Figs 3a,3b,3v). The calculatory evaluation of the measuring results is dealt with a special chapter. A table gives all values obtained. It shows that in uranium pitch blende a radioactive equilibrium exists, that uranium containing water exhibits a concentration of  $U^{234}$ . In the bituminous limestones the values are in all places close to the equilibrium; the uranium content is probably connected with the petroleum bearing water as in bitumen the uranium content as well as the

Card 2/3

On the Presence of an Isotopic Shift in Natural  
Uranium Compounds

SOV/7-58-5-8/15

relative content of  $U^{234}$  are increased. In the phosphorite-rich Kalsinters  $U^{234}$  is concentrated when hydrothermal waters have acted upon the rock; otherwise there is radioactive equilibrium. There are 3 figures, 1 table, and 6 references, 5 of which are Soviet.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im.V.I.Vernadskogo  
AN SSSR, Moskva (Moscow, Institute for Geochemistry and Analytical Chemistry imeni V.I.Vernadskiy, AS USSR)

SUBMITTED: January 27, 1958

Card 3/3

3(8), 3(0)  
 SOV/7-59-1-9/14  
 AUTHORS: Baranov, V. I., Surkov, Yu. A., Vilenskiy, V. D.  
 TITLE: On the Existence of Isotope Shifts in Natural Thorium Compounds  
 (O sushchestvovanii izotopnykh sdvigov v prirodnykh soye-  
 dineniyakh toriya)  
 PERIODICAL: Geokhimiya, 1959, Nr 1, pp 69-75 (USSR)  
 ABSTRACT: The formation pattern of  $\text{Th}^{228}$  from  $\text{Th}^{232}$  is as follows:  
 $\text{Th}^{232} (\alpha) \text{Ra}^{228} (\beta) \text{Ac}^{228} (\beta) \text{Th}^{228} (\alpha) \dots$  As a rule it is  
 assumed that a shift in the isotope ratio - e.g. because  
 of the removal of intermediate products - need not be con-  
 sidered. The authors investigated several samples of different  
 minerals supplied by A. P. Polyakov. Thorite and monazite were  
 leached out with hydrochloric acid, and the isotope ratio  
 in the extraction and residue was investigated. Zirconium  
 nitrate was added as carrier, precipitated as iodate and  
 twice purified from Fe and traces of uranium, polonium, and  
 bismuth in the anion exchanger EDE-10 P. Thorium was separated  
 from zirconium by the cation exchanger KU-2 and then applied  
 electrolytically to non-corroding steel discs. An apparatus  
 described by the authors in reference 5 served for the determina-  
 Card 1/2

SO7/7-59-1-9/14

On the Existence of Isotope Shifts in Natural Thorium Compounds

tion of the alpha spectra. The apparatus is again described (Figs 1 and 2), and some spectra are given (Fig 3). Besides the  $\text{Th}^{228}/\text{Th}^{232}$  ratio, the  $\text{Th}^{230}/\text{Th}^{232}$  ratio was determined from the spectra (Tables 1 and 2). The investigation results show that isotope shifts occur in nature, a fact which is in future to be taken into account in radiometric thorium determinations as well as in the determination of the absolute age. There are 3 figures, 2 tables, and 11 references, 7 of which are Soviet.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo  
AN SSSR, Moskva  
(Institute of Geochemistry and Analytical Chemistry imeni  
V. I. Vernadskiy AS USSR, Moscow)

SUBMITTED: October 15, 1958

Card 2/2

SURKOV, Y. A.

Author: G. Ye. Loev, A. P. Korolev, G. A. Murav, L. B. Surkov, Yu. A.

24(1)  
ARTICLE

TITLE:  
The Fine Structure of the  $\alpha$ -Spectrum of  $^{229}\text{Th}$   
(Tomskaya struktura  $\alpha$ -spektra  $^{229}\text{Th}$ )

PERIODICAL:  
Investiya Akademii nauk SSSR. Seriya fizicheskaya, 1959,  
Vol 13, No 1, pp 95-98 (USSR)

ABSTRACT:  
The radioactive isotope  $^{229}\text{Th}$  is obtained by the  $\alpha$ -decay of  $^{233}\text{U}$ , as the half-life of the latter is  $1.42 \cdot 10^5$  years, that of  $^{229}\text{Th}$ , however, only 7,000 years. A large quantity of  $^{233}\text{U}$  is necessary for the exact determination of the activity of the isotope  $^{229}\text{Th}$ . A paper (Ref 1) is mentioned in which the  $\alpha$ -decay of this isotope was investigated, but it did not deliver satisfactory results due to a poor resolution of the  $\alpha$ -spectrometer investigation was carried out with an ionization-chamber of high resolving power, and the chemical production of the isotope free oxide of the isotope  $^{229}\text{Th}$  is described in detail. The isotope  $^{229}\text{Th}$  investigated by the authors contains -

Card 1/2

besides the isotope  $^{229}\text{Th}$  - also  $^{227}\text{Th}$ , the energies of the unknown  $\alpha$ -lines were determined from the well-known  $\alpha$ -lines of  $^{226}\text{Th}$  and its daughter nuclei. The energy of the principal line of the  $\alpha$ -particles was determined by several measurements at 1040 keV, the determination of the energies of the other  $\alpha$ -groups was carried out by electronic calibration. A table contains the energies determined by the authors and the relative intensities of the lines of the isotope  $^{229}\text{Th}$  and  $^{227}\text{Th}$ . A short description of the decay of the isotope  $^{229}\text{Th}$  is given. The results of the investigation are summarized in this work. There are 5 figures, 1 table, and 6 references, 6 of which are Soviet.

ASSOCIATION: Fiziko-tekhnicheskii institut Akademii nauk SSSR (Physico-technical Institute of the Academy of Sciences, USSR)

Card 2/2

S/007/60/000/004/005/005  
B002/B055

AUTHORS: Cherdyntsev, V. V., Isabayev, Ye. A., ~~Surkov, Yu. A.~~,  
Orlov, D. P., Usatov, E. P.

TITLE: Excess  $U^{235}$  in magnetite with increased actinium content

PERIODICAL: Geokhimiya, no.4, 1960, 373-374

TEXT: The magnetite in a pegmatite vein was found to have a high content of  $U^{235}$  and actinium. The contents of radioelements was 1.3 ppm of uranium and 10 ppm of thorium. The Ac/Ra ratio exceeds the normal value by a factor of  $4.3 \pm 0.3$ . The age of the minerals is approximately 100 million years with certainty, however, less than 300 million years. The present publication reports the results obtained in determinations of the  $U^{235}/U^{238}$  ratio. From the ratio of the number of fission fragments produced by thermal neutron irradiation to the  $\alpha$ -activity of the sample, the

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$U^{235}/U^{238}$  ratio was found at  $1.18 \pm 0.06$ , which after correction for the presence of other radioelements alters to  $1.30 \pm 0.10$ . Determinations of the  $\alpha$ -spectra in the alpha-spectrometer at Kazakhskiy universitet (Kazakh University) yielded a ratio  $U^{235}/U^{238} = 1.60 \pm 0.13$ , and, in the alpha spectrometer of the Institut geokhimii im. V. I. Vernadskogo AN SSSR (Institute of Geochemistry imeni V. I. Vernadskiy AS USSR), a value of  $1.5 \pm 0.1$ . The latter determination was carried out by Yu. A. Surkov. A last series of measurements in the alpha analyzer KazGU (Kazakh State University), carried out by D. P. Orlov gave a value of  $1.40 \pm 0.15$ . This — excess of  $U^{235}$  in the magnetite with increased actinium content can only be explained by the existence of a transuranic isotope in nature up to the present day, which decays to actinium and the odd-numbered uranium isotope. E. K. Gerling is mentioned in the publication. There are 1 figure, 1 table, and 9 references: 9 Soviet-bloc and 3 non-Soviet-bloc.

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Excess  $U^{235}$  in magnetite with...

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ASSOCIATION: Kazakhskiy gosudarstvennyy universitet im. S. M. Kirova  
(Kazakh State University imeni S. M. Kirov). Institut geo-  
khimii i analiticheskoy khimii im. V. I. Vernadskogo AN SSSR,  
Moskva (Institute of Geochemistry and Analytical Chemistry  
imeni V. I. Vernadskiy, AS USSR, Moscow)

SUBMITTED: February 24, 1960

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AUTHORS: Baranov, V.I., Professor, Sarkov, Yu.A., Chernov, G.M.,  
Yakovlev, Yu.V.

TITLE: Radioactivation Analysis of Pure Materials and Prospects of Its  
Development

PERIODICAL: Zhurnal Vsesoyuznogo Khimicheskogo Obshchestva im. D.I.  
Mendeleeva, 1960, No. 5, Vol. 5, pp. 570-573

TEXT: The radioactivation analysis method is used for the determination of  
pure materials in the semiconductor and reactor building industries. It is  
highly sensitive, depending on the magnitude of the flux of bombarding  
particles and the cross-section of the activation of a given element, i.e.,  
its specificity; there is no necessity for a quantitative separation of the  
traces of the elements; no correction for the control test (Ref. 7-10). In  
the more recent application of the method gamma-spectroscopy is used (Ref.  
13-15) which reduces the number of chemical separations of the analyzed

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samples. By applying gamma spectroscopy, a continuous check of the accuracy and purity of the chemical operations can be carried out, contrary to the usual calculation of the  $\beta$ -activity. A study of the spectrum obtained leads to an estimation of the qualitative purity of the separated sample according to the energies of the characteristic gamma-rays. The amount of admixture present in the sample is determined from the areas of the spectra sections corresponding to the activated isotope of this admixture. The measurement of the area of the photopeak is done by approximation of the photopeak contour of the Gaussian error curve. If the sample under investigation does not emit gamma-rays, or if its half-life is so slight that it completely decays by the time the measurements are made, then the gamma-scintillation spectrometer introduces new possibilities for coping with this problem. Reference is made to a number of publications dedicated to the application of gamma-spectroscopy (Ref. 16-19). The authors of this article conducted a radioactivation analysis of admixtures in materials used in the semiconductor-manufacturing industry and list the obtained results. Ad-

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mixture detection in silicon was carried out using a 50-channel scintillation spectrometer. A 40 x 40 mm NaI(Tl) crystal served as the emission detector and the  $\Phi$ 40-(FEU-S) photomultiplier was used. The detector was surrounded by a lead shield. The impulses from the photomultiplier reached the 50-channel amplitude analyzer through the linear amplifier and discriminator. The analyzer is based on the principle of transformation of the pulses in time, combined with the memory device on an ordinary electrostatic cathode-ray tube. Recording of the signals on the analyzer tube renders it possible to obtain the spectrum image on a linear scale with an unlimited channel capacity. The resolution of the gamma-spectrometer measured by  $Cs^{137}$  is 9%. The estimated Zn content was  $1 \cdot 10^{-5}\%$ , arsenic  $1.2 \cdot 10^{-4}\%$ , copper and gallium  $2-3 \cdot 10^{-7}\%$ . Fig. 1 shows the gamma-spectrum of the activated silicon sample. Further work was carried out on the same gamma-spectrometer without chemical processing of the sample being analyzed for determining admixtures of Mn, Zn, Cu, As and Sb in several samples of thallium metal. A weighed batch (about 0.5 g) of the sample and standards in the form of microquantities of

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salts of the elements being determined were placed into quartzite containers previously processed with hot aqua regia and then rinsed with water, alcohol and ether. The containers were wrapped in aluminum foil, placed into aluminum cases and irradiated in a neutron flux of about  $10^{15}$  neutr. per  $\text{cm}^2 \cdot \text{sec}$  for 24-28 hours. After a chemical purification from impurities, primarily Na, the standards and samples were measured in the gamma-spectrometer. In analyzing thallium on the gamma-spectrometer a difficulty arises: although  $\text{Tl}^{204}$  formed in the reactor is a  $\beta$ -emitter with a transition to the main level, about 30% of its decay is due to K-captures. Thus a characteristic X-ray emission with an energy of about 75 Kev occurs, which renders the analysis difficult for small quantities of admixtures. Fig.2 shows the spectra of two investigated samples of thallium. The decay curve of the photopeak of As+Sb showed that it is mainly due to  $\text{As}^{76}$  ( $T_{1/2} = 26$  hours). Table 1 shows the result of the determination of Mn, Cu, Zn, Sb and As admixtures in the thallium sample. The quantitative analysis of the admixtures was carried out by comparing the areas or the photopeak heights of the

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sample being analyzed and the standards relative to one moment of time. Correction for the geometry was not introduced, since the samples and standards were measured under similar conditions. The admixture content (in %) was estimated after calculating the absolute mass of the admixture. Table 2 gives the results of the analysis of several samples of graphite, also carried out on the gamma-spectrometer without chemical separation. In discussing the future prospects of developing the radioactivation method of analysis the authors point out some of the difficulties in applying it. The main difficulty is given as being the fact that most substances when activated with neutrons become gamma-emitters themselves. Germanium is given as an example. Another difficulty lies in the processing of the gamma-spectrum obtained in the spectrometer due to the occurring compton electrons which give a continuous distribution of the pulses on the spectrum. A third difficulty is the detection of admixtures with a small yield, giving photopeaks which are weak in their intensity. The authors further state that one of the main problems which lie ahead in this connection is the development of

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new effective methods of chemical purification of ultra-small quantities of admixtures from the basic component having gamma-activity. The chemical purification in this case must not take up too much time, since the decay of the short-living activity lowers the sensitivity of the activation analysis. By developing the described methods, gamma-spectroscopy will become applicable for analyzing materials, which, when activated, become intensive gamma-emitters themselves. It is further recommended to decrease the Compton background by using more perfected spectroscopic apparatus. The authors have developed a one-channel double-crystal counting gamma-spectrometer with automatic recording of the spectra (Ref. 23). It is based on the principle of the simultaneous recording of the gamma-spectrum by two different crystals with subsequent counting of the obtained spectra in a corresponding difference scheme. A third aspect is the application of the double-crystal spectrometer for significantly increasing the sensitivity of the method without lessening the effectiveness and resolving power. The authors point out the necessity of developing an activation method for the analysis of short-lived

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isotopes. When investigating the admixtures of short-lived radioactivity, the activation analysis should be carried out near the reactor for this reason. The radio-chemical operations should be eliminated. Finally, the authors suggest that in order to detect certain elements by the activation method, it would be most feasible to use fast neutron fluxes. In the case of detecting Al and Mg admixtures, for example, the reaction on fast neutrons should be used:  $\text{Al}^{27}(\text{n}, \alpha)\text{Na}^{24}$  and  $\text{Mg}^{24}(\text{n}, \text{p})\text{Na}^{24}$ . The reaction on neutrons in the resonance energy field might also prove useful in this connection. A significant increase in the monochromatic neutron flux would then be necessary. The activation analysis method should be developed toward a constant minimum loss in its performance and toward increasing its productivity. Automation of measurements is suggested, as well as of the result processing, yielding a complete analytical chart of the sample. This can be facilitated by introducing into industry the activation method of analysis of elements by the computing technique. There are 3 figures, 2 tables and 23 references: 9 Soviet, 14 English.

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Investigation of the...

gadolinite with an age of  $2 \cdot 10^9$  years. The samples had been furnished from the Mineralogicheskii muzey AN SSSR (Mineralogy Museum of the AS USSR). The uranium was separated radiochemically from the minerals for an  $\alpha$ -spectrometric analysis. The relative content of  $U^{235}$  and  $U^{238}$  was determined from the  $\alpha$ -activity of these isotopes. An ionization chamber with screen (see Fig.2) had to be utilized since the uranium content was minute (0.25 - 1 mg). The chamber was filled with  $Ar + 0.5\% CH_4$ ; the  $\alpha$ -radiating preparation was located on the high-voltage electrode. The  $\alpha$ -particles will hit the collector electrode with a time delay of  $t_{delay} = (d - R \cos \varphi) / w$  according to their direction of flight;

R denotes the range of the  $\alpha$ -particles, w the electron drift rate, d the distance between high-voltage electrode and screen,  $\varphi$  the angle between the direction of flight of the  $\alpha$ -particle and the normal. The method of time collimation applied for the purpose consists in that only those pulses are recorded, for which  $t_{delay} < t'$ ; thus, the pulses from

$\alpha$ -particles emitted at small angles were eliminated. The degree of collimation was characterized by f ( $f/w = t_{max} - t'$ ). The share  $q$  of the recorded pulses from  $\alpha$ -particles is given by  $q = 1 - f/R = N/N_0$ , where  $N_0$

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and N denote the intensities of a line before and after the collimation, respectively. The following has been measured:  $Q = N_1/N_2$  (at two lines having the intensities  $N_1^0$  and  $N_2^0$ ) and  $Q^0 = \frac{N_1^0}{N_1} = \frac{N_1^0}{N_1} \frac{1 - \frac{1}{R_1}}{1 - \frac{1}{R_1}} = Q \frac{1 - \frac{1}{R_1}}{1 - \frac{1}{R_1}} = QA, (4).$

Practically, there were three lines for the uranium isotopes.

$$Q_{121}^0 = \frac{N_{121}^0}{N_{121}}, Q_{122}^0 = \frac{N_{122}^0}{N_{122}}, Q_{123}^0 = \frac{N_{123}^0}{N_{123}},$$

$$Q_{123} = \frac{N_{123}}{N_{123}}.$$

The following holds

$$Q_{123}^0 = Q_{123} A_{123} = Q_{123} \frac{Q_{123}}{Q_{123}} = \dots P_{123} = \frac{Q_{123} - Q_{123}^0}{Q_{123}} = \frac{1}{1 - \frac{1}{R_{123}}} \left( \frac{1}{R_{123}} - \frac{1}{R_{123}^0} \right).$$

$$= Q_{123} \left( 1 + \frac{Q_{123} - Q_{123}^0}{Q_{123}} \right) = Q_{123} (1 + P_{123}), (5)$$

and analogously

$$Q_{124}^0 = Q_{124} A_{124} = Q_{124} (1 + P_{124}), (6)$$

$$P_{124} = \frac{1}{1 - \frac{1}{R_{124}}} \left( \frac{1}{R_{124}} - \frac{1}{R_{124}^0} \right). (6a)$$

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$P_{235}$  and  $P_{234}$  are interrelated by

$$P_{235} = \frac{\frac{1}{R_{235}} - \frac{1}{R_{234}}}{\frac{1}{R_{235}} - \frac{1}{R_{234}}} P_{234} = \frac{R_{234} - R_{235}}{R_{234} - R_{235}} \frac{R_{234}}{R_{235}} P_{234} = b P_{234}. \quad (7)$$

$$b = \frac{R_{235} - R_{238}}{R_{234} - R_{238}} \frac{R_{234}}{R_{235}}$$

The ratio  $R_{234}/R_{235}$  had been determined from the range-energy curve as 1.135,  $b = 0.39$ . Finally using

$$A_{235} = (1 + b P_{234}) = [1 + b(A_{234} - 1)] = [1 + 0.39(A_{234} - 1)]. \quad (8)$$

the following expression is obtained for the correction coefficient  $A_{235}$ :  
 $Q_{235}^0 = Q_{235} [1 + 0.39(A_{234} - 1)]$ . For a real degree of collimation  $A_{235} \approx 1.20$  the error will be  $\delta A_{235} \approx 0.1 \delta b + 0.5 \delta A_{234}$ .  $b$  may be determined accurately to 5%. The measurements referred to a standard sample and  $q = Q_{\text{stand}}^0 / Q_{235}^0$  sample was determined. The background was negligibly

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